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09/988,598	11/20/2001	J. Barry Shackleford	10017223-1	8925

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

DATSKOVSKIY, SERGEY

ART UNIT PAPER NUMBER

2121

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/988,598

Applicant(s)

SHACKLEFORD ET AL.

Examiner

Sergey Datskovskiy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-16 have been submitted for examination.
2. Claims 1-16 have been rejected.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramsey, "Genetic Algorithm Optimizer" (article and a Java applet located at <http://ai.bpa.arizona.edu/~mramsey/ga.html>, dated 1997 by WayBack Machine at <http://web.archive.org>).

### **Claim 1**

Ramsey teaches a graphical user interface displaying in a first portion thereof an evolution of a solution for a genetic algorithm (GA demo, left window) that represents potential solutions to complex problems (GA Overview, first paragraph, the problem being solved is finding maximum of the graph) as one or more chromosomes (solution chromosomes are displayed in GA demo as colored vertical lines) and selects a solution from the potential solutions based on the chromosome that optimally solves the

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complex problem according to a fitness function (page 1, last paragraph), said graphical user interface comprising:

an evolution parameter field in a second portion of said graphical user interface adjustable to assist in identifying the optimal solution to the complex problem represented using the genetic algorithm, said evolution parameter field having a first value, said evolution parameter field comprising at least one variable related to the evolution of said genetic algorithm towards the optimal solution (Evolution parameters are disclosed as parameters located on the right side of GA demo window. These parameters specify: mutation rate, crossover rate, number of agents and number of genes. Each parameter represents a variable described according to its name, and has a current value shown by a number above a slide bar); and

modification interface for modifying the evolution of said solution for said genetic algorithm in real time based upon an adjustment of said evolution parameter field from said first value to a second value (GA demo, evolution parameters can be modify while the program is running by using corresponding slider bars).

## **Claim 2**

Ramsey teaches the graphical user interface according to claim 1, wherein the modification interface used for the adjustment of said evolution parameter field is a slider (GA demo, slider bars).

## **Claim 3**

Ramsey teaches the graphical user interface according to claim 1, wherein said modification interface to said evolution parameter field is manipulated by a mouse, joystick, knob, or touchpad (GA demo, standard windows GUI interface is used).

#### **Claim 4**

Ramsey teaches the graphical user interface according to claim 1. wherein said variable related to the evolution of said genetic algorithm is a number of evaluations performed in said genetic algorithm during a run (GA demo, number of agents determines the number of evaluations done during each run).

#### **Claim 5**

Ramsey teaches the graphical user interface according to claim 1. wherein said variable related to the evolution of said genetic algorithm is a probability of any bit in a chromosome representing a potential solution of being a outpoint (GA demo, crossover rate is based on a probability of crossing two genes at any bit with the result being a potential solution, see the description of crossover in section "Crossover: Let the Mating Begin" on page 2).

#### **Claim 6**

Ramsey teaches the graphical user interface according to claim 1, wherein said variable related to the evolution of said genetic algorithm is a probability of any bit in a chromosome representing a potential solution of being mutated during a run of said

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genetic algorithm (GA demo, mutation rate; described on page 2 in section "Mutation: Three Micron Island or a Virtual Chernobyl").

#### **Claim 7**

Ramsey teaches the graphical user interface according to claim 1, wherein said modification interface comprises a direct manipulation of said genetic algorithm as indicated by the adjustment of said evolution parameter, said direct manipulation being accomplished by overwriting the at least one variable related to the evolution of said genetic algorithm (GA demo, adjusting the sliders result in a direct manipulation by changing a corresponding variable; for example, adjusting the Genes slider results in overwriting a variable containing the number of genes in each chromosome).

#### **Claim 8**

Ramsey teaches a computer implemented method for dynamically modifying an evolution of a solution for a genetic algorithm that represents potential solutions to complex problems as one or more chromosomes (GA Overview, first paragraph, the problem being solved is finding maximum of the graph) and selects a solution from the potential solutions based on the chromosome that optimally solves the complex problem according to a fitness function (page 1, last paragraph), said method comprising:

adjusting an evolution parameter field within a graphical user interface of a computer system from a first value to a second value resulting in an adjustment, said evolution parameter field comprising at least one variable related to the evolution of said

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genetic algorithm (Evolution parameters are disclosed as parameters located on the right side of GA demo window. These parameters specify: mutation rate, crossover rate, number of agents and number of genes. Each parameter represents a variable described according to its name, and has a current value shown by a number above a slide bar);

updating the evolution of said solution for said genetic algorithm in real time based upon said adjusting (GA demo, evolution parameters can be modify while the program is running by using corresponding slider bars); and

displaying the update of said solution for said genetic algorithm within the graphical user interface (solutions are updated and displayed in GA demo as colored vertical lines).

#### **Claim 9**

Ramsey teaches the method according to claim 8. wherein in said adjusting, said evolution parameter field is adjusted from said first value to said second value by a user (GA demo, adjusting from one value to another is done by moving a slider).

#### **Claim 10**

Ramsey teaches the method according to claim 8, wherein said updating further comprises a direct manipulation of said genetic algorithm as indicated by the adjustment of said evolution parameter field, said direct manipulation being accomplished by overwriting a variable used in said genetic algorithm (GA demo, adjusting the sliders

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result in a direct manipulation by changing a corresponding variable; for example, adjusting the Genes slider results in overwriting a variable containing the number of genes in each chromosome).

#### **Claim 11**

Ramsey teaches the method according to claim 10, wherein said variable used in said genetic algorithm is a number of evaluations performed each run in said genetic algorithm (GA demo, number of agents determines the number of evaluations done during each run).

#### **Claim 12**

Ramsey teaches the method according to claim 10, wherein said variable used in said genetic algorithm is a probability of any bit in a chromosome representing a potential solution of being a cutpoint (GA demo, crossover rate is based on a probability of crossing two genes at any bit with the result being a potential solution, see the description of crossover in section "Crossover: Let the Mating Begin" on page 2).

#### **Claim 13**

Ramsey teaches the method according to claim 10 wherein said variable used in said genetic algorithm is a probability of any bit in a chromosome representing a potential solution of being mutated during a run of said genetic algorithm (GA demo,



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mutation rate; described on page 2 in section "Mutation: Three Micron Island or a Virtual Chernobyl").

#### **Claim 14**

Ramsey teaches a machine readable memory for storing computer code (it is inherent for a computer program such as GA demo to be stored in a machine readable memory) to act as a graphical user interface to a genetic algorithm that represents potential solutions to complex problems (GA Overview, first paragraph, the problem being solved is finding maximum of the graph) as one or more chromosomes (solution chromosomes are displayed in GA demo as colored vertical lines) and selects a solution from the potential solutions based on the chromosome that optimally solves the complex problem according to a fitness function (page 1, last paragraph), said memory comprising:

a first code section stored in memory for receiving an adjustment of an evolution parameter field within said graphical user interface from a first value to a second value, resulting in an adjustment, said evolution parameter field comprising at least one variable related to the evolution of said genetic algorithm towards the optimal solution (Evolution parameters are disclosed as parameters located on the right side of GA demo window. These parameters specify: mutation rate, crossover rate, number of agents and number of genes. Each parameter represents a variable described according to its name, and has a current value shown by a number above a slide bar);

a second code section stored in memory for a modification interface that modifies the evolution of said solution for said genetic algorithm in real time based upon an adjustment of said evolution parameter field from a first value to a second value (GA demo, evolution parameters can be modify while the program is running by using corresponding slider bars); and

a third code section stored in memory for displaying the modification of the evolution of said solution for said genetic algorithm within the graphical user interface (solutions are updated and displayed in GA demo as colored vertical lines).

#### **Claim 15**

Ramsey teaches the machine readable memory according to claim 14, wherein said memory exists on a server (GA demo is stored on a webpage located on a web server).

#### **Claim 16**

Ramsey teaches the machine readable memory according to claim 14, wherein said memory is used on a server providing a website on the Internet (GA demo is stored on a web page).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshida et al. ("GAVIEW – a visualization tool for supporting GA simulations and analyses") discloses using GUI with a genetic algorithm.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sergey Datskovskiy whose telephone number is (571) 272-8188. The examiner can normally be reached on Monday-Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight, can be reached on (571) 272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S.D.

Assistant examiner

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A handwritten signature in black ink, appearing to read 'Anthony Knight', is positioned above the printed name.

Anthony Knight

Supervisory Patent Examiner

Technology Center 2100